

32. (New) The method of claim 31 wherein the J1 field includes the source identifier and the destination identifier.

33. (New) The method of claim 30 further comprising:
applying a routing protocol to read the source identifier and the destination identifier.

34. (New) The method of claim 30 wherein the end-to-end services include one or more of routing, provisioning and restoration of functions.

35. (New) The method of claim 30 wherein the end-to-end services are path-level services of a SONET communications network.

36. (New) The method of claim 30 wherein the method is performed in a communication circuit disposed in one of a synchronous optical network (SONET) and a Synchronous Digital Hierarchy (SDH).

37. (New) The method of claim 36, wherein the communication circuit is implemented as a line card.

38. (New) The method of claim 36 wherein the communication circuit is a protocol processor.

39. (New) The method of claim 30 wherein the data further includes one or more of transport identification data (TID), Internet Protocol (IP) addresses, Common Language Location Information (CLLI) data, and requests for bandwidth.

40. (New) The method of claim 30 wherein the data providing the source identifier and the destination identifier avoid manual point-by-point routing of STS-Ns.

41. (New) The method of claim 30 further comprising:
applying a wavelength routing protocol to the data in the transport overhead field to provide end-to-end services, the wavelength protocol locating new paths for communication.

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42. (New) The method of claim 41 wherein an intelligent routing software system in combination with the wavelength routing protocol determines end-to-end routing automatically.

43. (New) The method of claim 41 wherein the wavelength protocol locating new paths for communication is implemented manually.

44. (New) An apparatus disposed in a communication system, the apparatus comprising:

a receiver configured to receive data in a transport overhead field from at least one network element, the data providing a source identifier and a destination identifier, wherein the receiver uses the data in the transport overhead field to provide end-to-end services.

45. (New) The apparatus of claim 44 wherein the transport overhead field is a J1 field in a SONET communication packet.

46. (New) The apparatus of claim 45 wherein the J1 field includes the source identifier and the destination identifier.

47. (New) The apparatus of claim 44 wherein the receiver applies a routing protocol to read the source identifier and the destination identifier.

48. (New) The apparatus of claim 44 wherein the end-to-end services include one or more of routing, provisioning and restoration of functions.

49. (New) The apparatus of claim 44 wherein the end-to-end services are path-level services of a SONET communications network.

50. (New) The apparatus of claim 44 wherein the data further includes one or more of transport identification data (TID), Internet Protocol (IP) addresses, Common Language Location Information (CLLI) data, and requests for bandwidth.

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51. (New) The apparatus of claim 44 wherein the data providing the source identifier and the destination identifier avoids manual point-by-point routing of STS-Ns.

52. (New) The apparatus of claim 44 further comprising:
means for applying a wavelength routing protocol to the data in the transport overhead field to provide end-to-end services, the wavelength protocol locating new paths for communication.

53. (New) The apparatus of claim 52 wherein an intelligent routing software system in combination with the wavelength routing protocol determines end-to-end routing automatically.

54. (New) The apparatus of claim 52 wherein the wavelength protocol locates new paths for communication manually.

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